



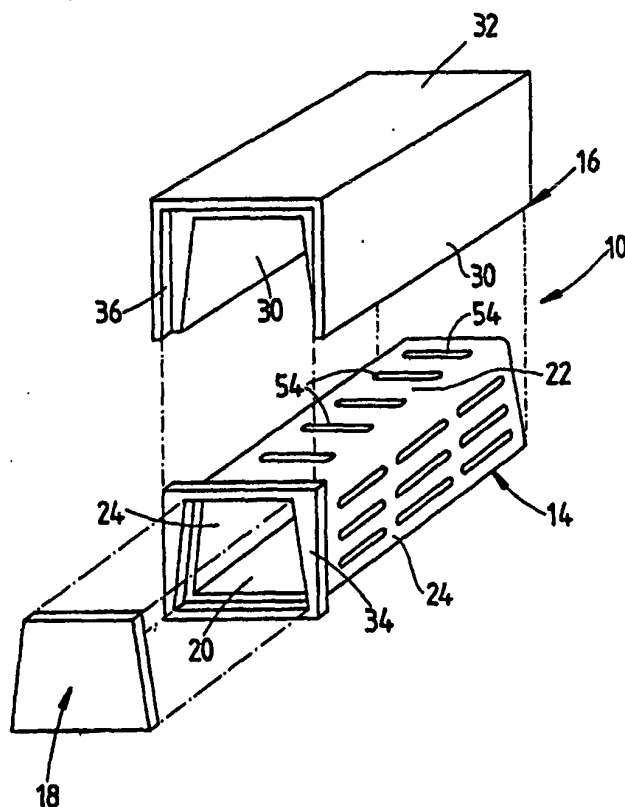
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 6 : E04H 13/00	A1	(11) International Publication Number: WO 95/31623 (43) International Publication Date: 23 November 1995 (23.11.95)								
<p>(21) International Application Number: PCT/AU95/00272</p> <p>(22) International Filing Date: 12 May 1995 (12.05.95)</p> <p>(30) Priority Data:</p> <table border="0"> <tr> <td>PM 5601</td> <td>12 May 1994 (12.05.94)</td> <td>AU</td> </tr> <tr> <td>PM 6220</td> <td>10 June 1994 (10.06.94)</td> <td>AU</td> </tr> <tr> <td>308,526</td> <td>19 September 1994 (19.09.94)</td> <td>US</td> </tr> </table> <p>(71)(72) Applicant and Inventor: GIANNARELLI, Emilio, Teodoro [AU/AU]; 246 Nicholson Street, Fitzroy, VIC 3065 (AU).</p> <p>(74) Agents: WEBBER, David, Brian et al.; Davies Collison Cave, 1 Little Collins Street, Melbourne, VIC 3000 (AU).</p>	PM 5601	12 May 1994 (12.05.94)	AU	PM 6220	10 June 1994 (10.06.94)	AU	308,526	19 September 1994 (19.09.94)	US	<p>(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG).</p> <p>Published <i>With international search report.</i></p>
PM 5601	12 May 1994 (12.05.94)	AU								
PM 6220	10 June 1994 (10.06.94)	AU								
308,526	19 September 1994 (19.09.94)	US								

(54) Title: MODULAR MAUSOLEUM

(57) Abstract

A module (12) for forming a mausoleum (10) comprising a crypt structure (14) having integral side walls (24), an end wall (26), a roof (22) and a floor (20). The crypt structure (14) is surrounded at the roof (22) and side walls (24) by a support structure (16) which is interconnected with the crypt structure (14). The support structure (16) has a roof portion (32) and side wall portions (30) respectively engaged with the roof (22) and side walls (24) of the crypt structure (14). An open end of the crypt structure (14) is closeable by an end closure (18) to seal the crypt structure (14). Modules (12) are stacked one above the other, and side by side if required, to form the mausoleum (10).



FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

MODULAR MAUSOLEUM

BACKGROUND OF THE INVENTION

5

Field of the Invention

This invention relates to a mausoleum and to a module for forming a mausoleum.

10 Prior Art

United States patents 3,878,656, 3,897,663, 3,938,773, 4,048,772, 4,068,425, 5,243,794 describe various forms of mausoleums constructed from prefabricated members. These are intended for above ground burial and, usually, present a vertically and
15 horizontally extending array of crypts.

The crypt structure of United States patent 3,897,663 has spaced parallel vertical walls having sidewardly projecting supports at vertically spaced locations, horizontal slabs being positioned on the support so as to extend between the side walls. The
20 arrangements of United States patents 3,878,656, and 3,938,773 employ modules which have at least portions which are of inverted U shaped section so that the lower edges of these may rest upon upper walls of underlying modules to form the structure. The arrangements in United States patents 4,048,772 and 5,243,794 use L-shaped modules. All of these arrangements are therefore characterised in that each module defines less
25 than the whole of the side wall/ceiling/floor of each individual crypt. That is, in each case one horizontal slab or an analogous modular portion forms both the floor and the ceiling of each vertically adjacent pair of crypts, and each crypt chamber is not defined until vertically superimposed modules are provided.

30 United States Patent 2,783,523 describes a burial vault formed of concrete and having a separately formed roof. Two vaults may be stacked one above the other, but this arrangement is not convenient for forming a multi-crypt mausoleum. For example,

- 2 -

since access to the lower vault is prevented when the uppermost vault is positioned on it, so the lower vault must be closed before stacking the vaults.

United States Patent 1,014,614 describes a temporary burial vault, which has
5 bottom, top and side walls moulded together and an end cover slidable vertically to a position where it closes an open end of the vault. This vault is also not suitable for forming a multi-crypt mausoleum.

United States Patent 692067 describes a portable burial vault formed of a metal
10 inner shell, closed by an end closure and then sealed by application over all exterior surfaces of a concrete-like material. This is not suitable for forming a multi-crypt mausoleum, for example since the exterior sealing is effected over all the inner shell.

It is highly desirable that crypts be properly sealable. Otherwise gases or liquid
15 products formed from the entombed body may leak from the crypt and cause undesirable odours and unsightly appearance, or damage. Infestation by insects can occur if even a slight crack or opening appears in the crypt. On the other hand, it is extremely difficult to secure long term sealing in the described prior constructions. Even where adequate sealing is in the first instance provided, such as by placing sealing material between
20 portions of the structure defining a crypt floor and side walls of the crypt, such as by use of settable or resilient sealing elements, most mausoleum structures are substantial in size and weight, and it is impossible to surely avoid long term movement of modules relative to each other, such as due to settling of mausoleum foundations, or expansion or contraction of modules or parts of these. In cases where the modules are structurally
25 self-sufficient (ie individually capable of self-support) movement as between modules, such as twisting movement about the lengthwise axis of a crypt, may quite readily open up gaps between adjacent modules. This is particularly so where, as is usual, reinforced concrete is the medium from which the modules are formed.

30 Generally cracking of concrete structures is likely to occur over time, and will in the prior described constructions likely in any event to lead to leakage in the long term.

SUMMARY OF THE INVENTION

According to the present invention there is provided a module for forming a
5 mausoleum comprising a crypt structure having integral side walls, a roof and a floor, the
crypt structure being surrounded at the roof and side walls by a support structure which
is interconnected with the crypt structure. The support structure may have a roof portion
and side wall portions respectively engaged with the roof and side walls of the crypt
structure. One end of the crypt structure may be closed by an end wall and the other end
10 closeable by a suitable end closure to seal the crypt structure.

It is preferred that the end closure be of double walled construction similar, for
example, to the structure above described for the crypt structure itself.

15 The crypt structure may be formed as a unitary integral structure, such as an
integral plastics moulding, and the support structure formed of concrete. The concrete
may be suitably reinforced, such as by weight bearing elements which extend within the
side wall portions.

20 The module may include a plurality of crypt structures each surrounded at the side
walls and roof thereof by the support structure.

The invention also comprises a method of forming a module for forming a
mausoleum, comprising forming a moulded crypt structure having side walls, a roof and
25 floor, and moulding flowable settable material such as concrete around the side walls and
roof thereof.

The invention also provides a mausoleum formed from modules as above
described, and a mausoleum formed by the last described method.

30

The invention also describes a module for forming a mausoleum comprising a
crypt structure having integral side walls, a roof, an end wall and a floor, the crypt

- 4 -

structure being surrounded at the roof and side walls by a support structure which is interconnected with the crypt structure, the end of the crypt structure opposite the end wall being sealable to enable perishable genetic material to be preserved in the crypt structure when sealed.

5

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE ACCOMPANYING DRAWINGS

The invention is further described by way of example only with reference to the
10 accompanying drawings in which:

Figure 1 is a diagrammatic perspective view of a mausoleum constructed in accordance with the invention;

Figure 2 shows disassembled components of a crypt module incorporated into the
15 mausoleum of Figure 1;

Figure 3 is a lengthwise cross-sectional view of the assembled module of Figure 2;

Figure 4 is a fragmentary rear end perspective view of the module of Figure 3;

Figure 5 is a lengthwise cross-section of a mould for forming the module of
20 Figure 2;

Figure 6 is a cross-section on the line 6-6 in Figure 5;

Figure 7 is a cross-section on the line 7-7 in Figure 5;

Figure 8 is a transverse cross-section of a modified form of the module of Figure 2, taken approximately halfway along the length thereof;

25 Figure 9 is a cross-section on the line 9-9 in Figure 8;

Figure 10 is an enlarged fragmentary view corresponding to the right hand side of Figure 8;

Figure 11 is a fragmentary view showing how modules of the kind shown in Figures 8 to 11 are positionally positioned one above the other;

30 Figure 12 is an exploded fragmentary perspective view showing components of the module of Figure 2 from the rear of the module; and

Figure 13 is a perspective view of a multiple crypt module formed in accordance

- 5 -

with the invention.

DETAILED DESCRIPTION

5 Referring to Figure 1, the mausoleum 10 shown therein comprises a two dimensional array of crypt modules 12 positioned in adjacent rows, the modules 12 in each row being vertically aligned.

The modules 12 are each formed from the components shown in Figure 2. These
10 components include a moulded plastics crypt structure 14, a support structure 16 and a closure 18 for the crypt structure.

The crypt structure 14 has a floor 20, a roof 22 and opposed side walls 24. As best shown in Figure 3 a rear end thereof is closed by a rear wall 26, the opposite end
15 of the structure 14 being open. Structure 16 has opposed side wall portions 30, and a roof portion 32. The roof portion 32 overlies the roof 22 of the structure 14 and is in intimate contact therewith. The wall portions 30 similarly overlie in intimate contact the outer surfaces of the walls 24. Wall portions 30 extend downwardly to terminate at a location adjacent the undersurface of the floor of the structure 14.

20

At its forward end, the structure 14 has a front planar portion 34 of rectangular form and this is neatly accommodated within a correspondingly shaped recess 36 in the front of the structure 16. At the rear of the structure 16, two downwardly depending legs
25 38 are formed, and the rear wall 26 of the structure 14 bears against this.

25

The closure 18 may be of any suitable form. As shown in Figure 3, it is in any event securable against the front end of the structure 14 to close this and seal the interior of the crypt structure. The closure 18 may for example be bolted to the forward end of the structure 14 and suitable sealing means may be provided to seal the closure so that
30 egress of material from the interior of the crypt chamber, when sealed, is prevented.

The closure can be positioned for affixing or can be removed by (only) inward

- 6 -

or outward movement relate to structure 14 so that even when the module is assembled into a mausoleum, it is still possible to seal or open individual crypts without dismantling the mausoleum.

5 The structure 16 is preferably formed of reinforced concrete. Figures 5 to 7 illustrate manufacture of a module 12 by moulding around the crypt structure 14.

The mould 43 comprises a base 40 with opposed side walls 42, 44 and opposite end walls 46, 48.

10

The internal mould cavity 47 so formed is generally rectangular in transverse and lengthwise cross-section. The crypt structure 14, pre-formed, is inserted into the mould so as to rest on the base thereof. The planar portion 34 of the crypt structure 14 rests against the internal face of wall 46 of the mould, and the rear wall of the structure 14
15 rests against the inner surface of the end wall 48 of the mould. The side to side dimension of the internal mould cavity is significantly greater than the side to side width of the structure 14, and the upper edges of the side walls 42, 44 and end walls 46, 48 are horizontally aligned and significantly higher than the upper surface of the crypt structure 14. The crypt structure 14 is positioned centrally in the side to side direction of the
20 mould, as shown in Figure 6, so that there is a gap between each side surface of the structure 14 and the facing internal surfaces of the walls 42, 44.

The wall 48 has a forwardly projecting portion 48a which is of the form shown in Figure 7, so that there is, around the periphery of the portion 48a, a U-shaped cavity
25 portion 50 as shown in Figure 7.

With the structure 14 in the position described, concrete is poured into the mould cavity, and around the side walls and roof of the structure 14 and into the mould portion 50. Also, around the periphery of the forward planar portion 34, there is a U-shaped
30 gap, and concrete enters this also.

The concrete is trowelled off by levelling at the top at the level of the upper edges

- 7 -

of the walls 42, 44, 46, 48 and the concrete allowed to set to form the support structure 16. The roof portion 32 of the support structure is thus defined by the set concrete above the crypt structure and the wall portions 30 are formed by set concrete between the walls 42, 44 of the mould and the respective side surfaces of the crypt structure.

5

Generally, the set concrete will adhere satisfactorily to the outer walls of the structure 14 but, to improve adhesion, suitable formations, such as the projections 54 shown, may be formed on the external periphery of the structure 14 to facilitate keying as between the structures 14 and 16.

10

Any suitable reinforcement may be provided in the concrete which forms the structure 16; for example reinforcing mesh (not shown) will normally be used as conventionally provided in reinforced concrete work. Figures 8 to 10 illustrate one method of additional reinforcement which comprises moulding into the two side wall portions 30 of the structure 16 lattice structures 60, each of which comprises an upper rail 62, a lower rail 64 and a plurality of upright interconnecting rods 66, which rods are welded at each end to respective ones of the rails 62, 64. In the illustrated arrangement, the rails 62, 64 are of channel shaped configuration, when viewed in cross-section, so as to provide lengthwise extending channels running along the length of the module 12 at top and bottom surfaces thereof, and adjacent the side edges of the module. When modules 12 are assembled one above the other to form a mausoleum, suitable spacer elements 70 as shown in Figure 11 may be positioned to run along the lengths of aligned channels on lower and upper modules 12 to assist in locating the modules one relative to the other.

25

Suitable sealing material may be provided where the modules interengage, such as in the vicinity of the overlying channels 62, 64. However, it is not necessary that such sealing be provided in most instances, particularly if the crypt structure 14 is, as described, formed as an integral unit.

30

The crypt structure 14 may be formed by conventional plastics moulding techniques. One method is to rotationally mould two generally elongate, but cup shaped,

- 8 -

members which interfit one within the other so as to form the side walls, roof, floor and end wall of the crypt structure as a double walled formation with a gap therebetween which is subsequently filled with suitable heat insulative material such as a foamed material introduced through suitable openings in the outer of these two members. The
5 end closure may be similarly formed as a double-walled insulated structure. Generally, however it is not necessary to provide structures of this complexity. A single walled rotationally moulded or otherwise formed plastics moulding may be employed. Polyethylene may be used to form the structure. It is preferred however to form the end closure as a double walled insulated structure.

10

Suitable arrangements may be made for venting gases from the crypt chamber, such as a one way valve in the end wall of the crypt structure 14 and which permits egress of gases but prevents ingress. In the described arrangements, the floor of the module 12 is formed by the floor 20 of the crypt structure 14. This is satisfactory since
15 the structural load of the weight of the module and of modules positioned above it is borne by the wall portions 30 of the support structure 16. It would be possible however to mould reinforced concrete around the bottom of the floor so as to be structurally continuous with the side wall portions 30 of the structure 16, so that the floor of the crypt structure 14 was also supported by the structure 16.

20

The described arrangement has the advantage that the crypt chamber can be made structurally coherent in the sense that damage to the support structure such as cracking or the like, which may occur over time, will not necessarily directly cause damage to the crypt structure 14.

25

Thus, the crypt structure with its sealed end closure will provide protection against leakage of gases or liquids from the crypt chamber. This is particularly the case where the crypt structure is formed as an integral moulding, as described.

30

Because the crypt structure is not required to be load bearing (it being possible to arrange for all substantial load bearing to be done by the support structure 16) the crypt structure 14 need not be particularly strong and may be made relatively cheaply

- 9 -

with relatively thin walls, and thus be light, to facilitate handling.

The described construction may be employed where multiple crypts are to be defined. Figure 13 shows a module 100 where a reinforced concrete support structure
5 116 is moulded around a number of side by side crypt structures 14. Thus, there is a roof portion 132 of the support structure 116, which extends over the tops of the structures 14, and integral downwardly depending walls between the structures 14 and at each end of the module 100.

10 The described arrangement, where the end closure 18 can be removed or attached by movement only in the direction towards and away from the end wall of the crypt structure, ensures that crypts in a multi-crypt mausoleum can readily be closed and if necessary opened without dismantling the crypt. Generally the end closure should be capable of being removed or positioned to close a crypt when the crypt structure is *in situ*
15 in a mausoleum, with other crypt structures to either side and thereabove.

To assist in maintaining the interior of the modules in good condition, it is preferred that the coffin floor have positioned thereon a material able to absorb liquids which may egress from coffins in the module. A suitable material for this purpose is that
20 marketed as "Super Inner Liner" or "Zorb-Sheet" or "Z.I.L." material, marketed by Ensure-A-Seal 431 Manor Road, Delmont, United States of America. This is in the form of a sheet of paper-like appearance which on contact with liquids turns these into a semi-solid state. A sheet of this folded into concertina form may be positioned on the floor of the module, for example, towards the end wall 136.

25

The described crypt structure permits perishable genetic material to be preserved in a fashion sealed against atmospheric weather conditions.

The described construction has been advanced merely by way of explanation, and
30 many modifications and variations may be made thereto without departing from the spirit and scope of the invention as defined in the appended claims.

- 10 -

CLAIMS:

1. A module for forming a mausoleum comprising a crypt structure having integral side walls, a roof, an end wall and a floor, the crypt structure being surrounded at the
5 roof and side walls by a support structure which is interconnected with the crypt structure, the end of the crypt structure opposite the end wall being sealable to enable perishable genetic material to be preserved in the crypt structure when sealed.
2. A module according to claim 1 wherein the support structure has a roof portion
10 and side wall portions respectively engaged with the roof and side walls of the crypt structure.
3. A module according to claim 2 wherein one end of the crypt structure is closed by an end wall of the crypt structure and the other end is closeable by an end closure to
15 seal the crypt structure.
4. A module according to claim 3 wherein the crypt structure is formed as a unitary integral structure and the support structure formed of concrete.
- 20 5. A module according to claim 4 wherein the crypt structure is formed as an integral plastics moulding.
6. A module according to claim 5 wherein the crypt structure is reinforced by weight bearing elements which extend within the side wall portions.
25
7. A module according to claim 5 wherein the end closure is affixable and removable by movement outwardly of the crypt structure.
8. A module according to claim 1 wherein the module includes a plurality of crypt
30 structures each surrounded at the side walls and roof thereof by the support structure.
9. A mausoleum formed by a plurality of stacked crypt structures as claimed in claim

- 11 -

1.

10. A method of forming a module for forming a mausoleum, comprising forming a moulded crypt structure having side walls, a roof and floor and moulding flowable
5 settable material around the side walls and roof thereof.

11. A method as claimed in claim 10 wherein the flowable settable material is concrete.

10 12. A mausoleum formed by the method of claim 10.

13. A module as claimed in claim 1 including means keying the crypt structure to the support structure.

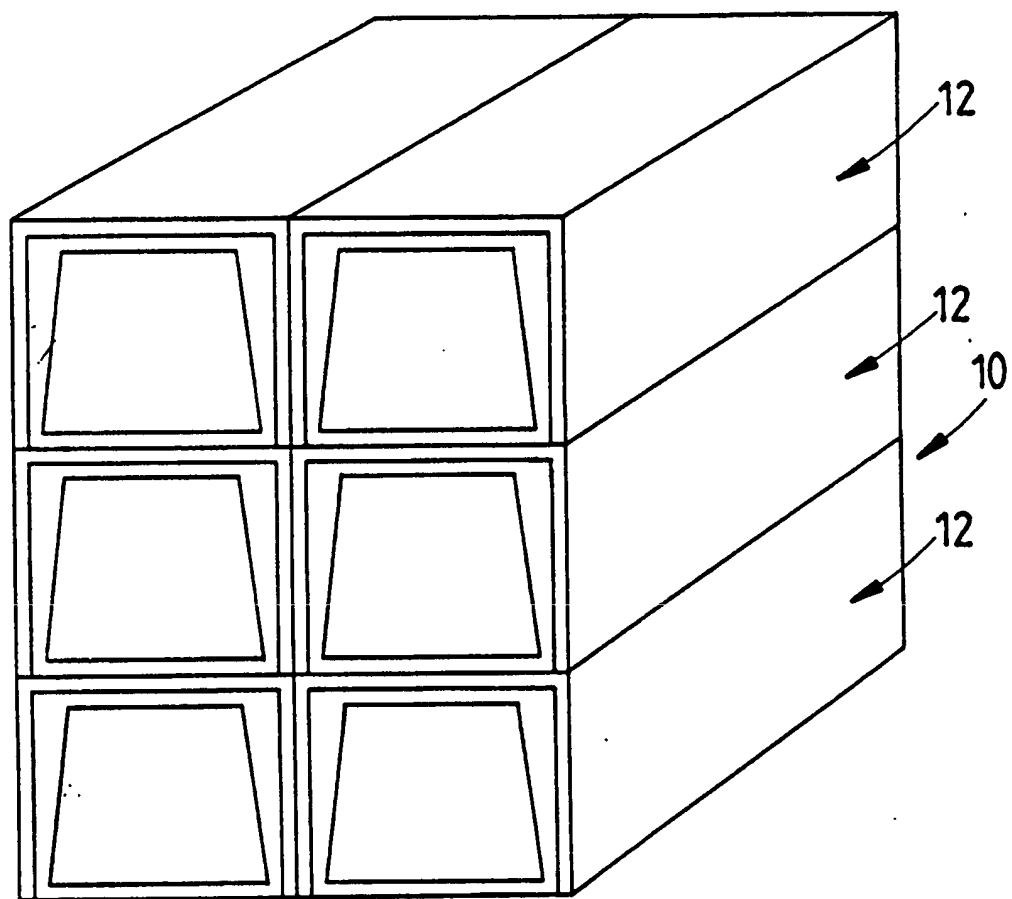
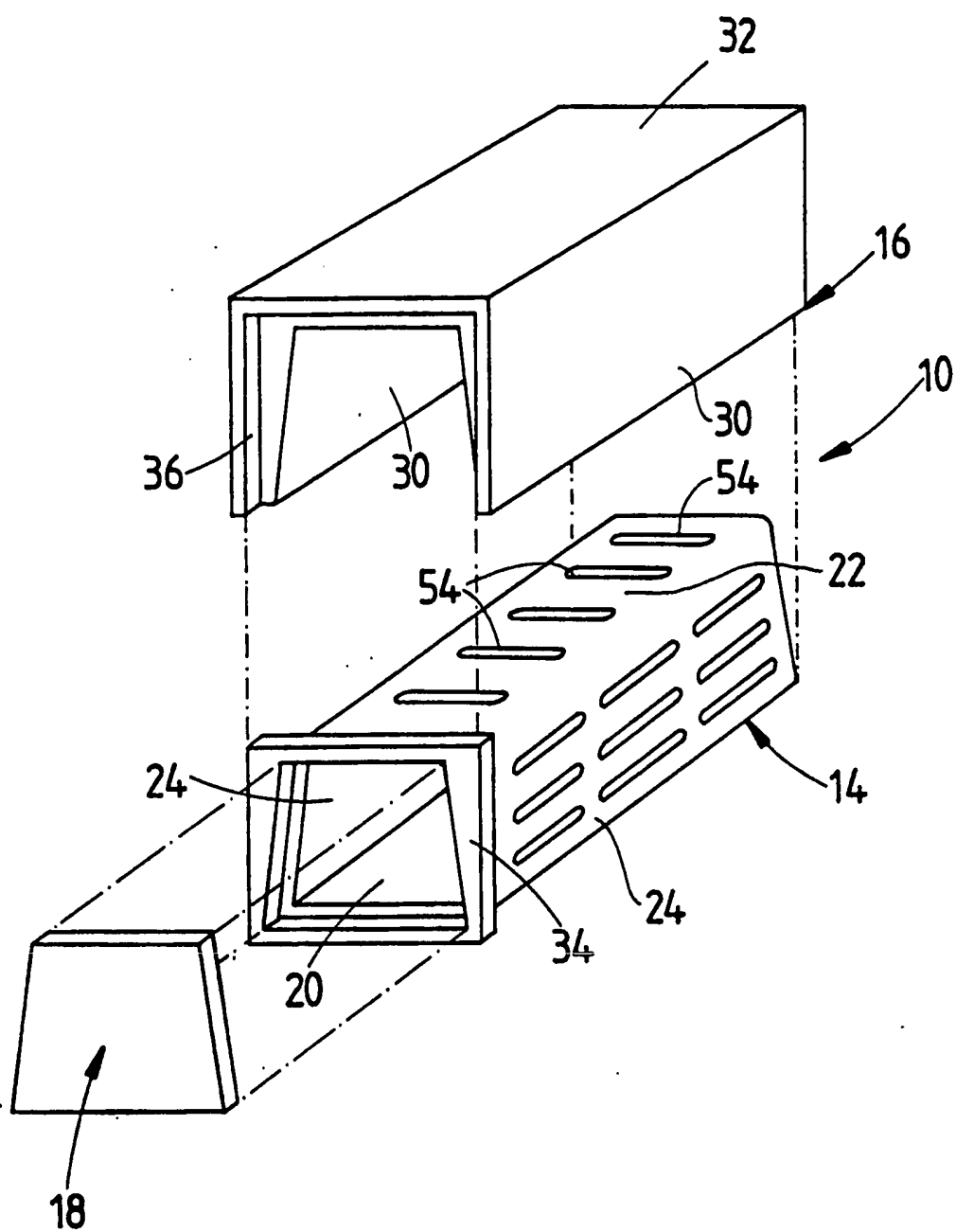


FIGURE 1

FIGURE 2

3/7

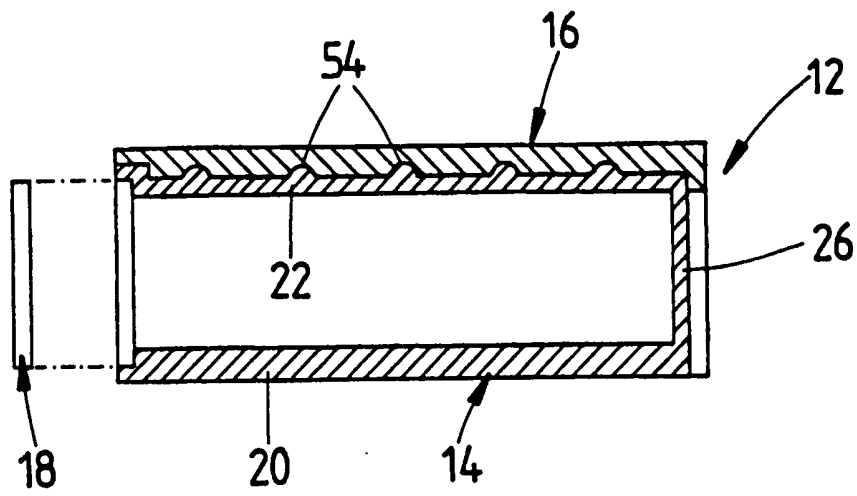


FIGURE 3

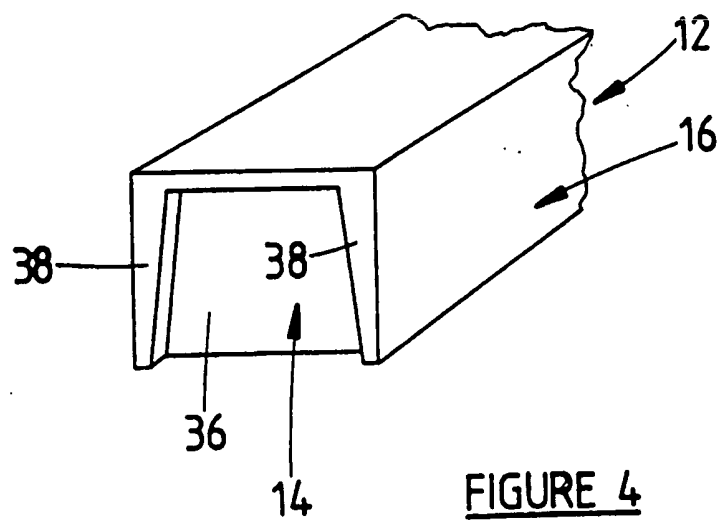
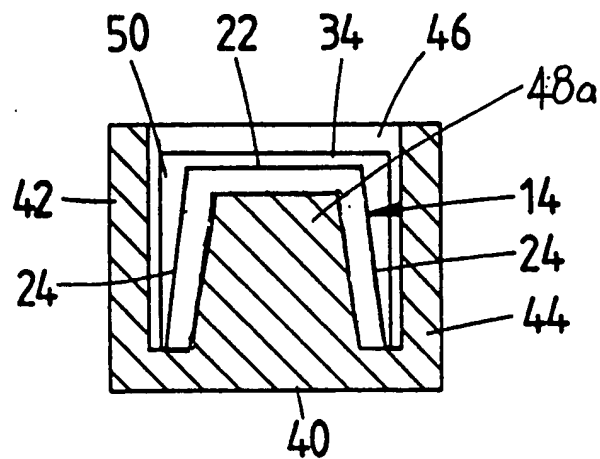
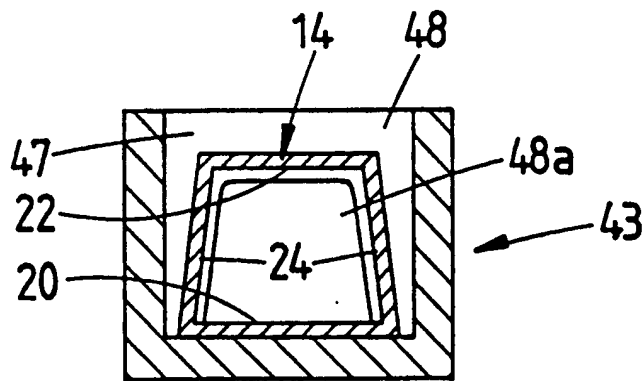
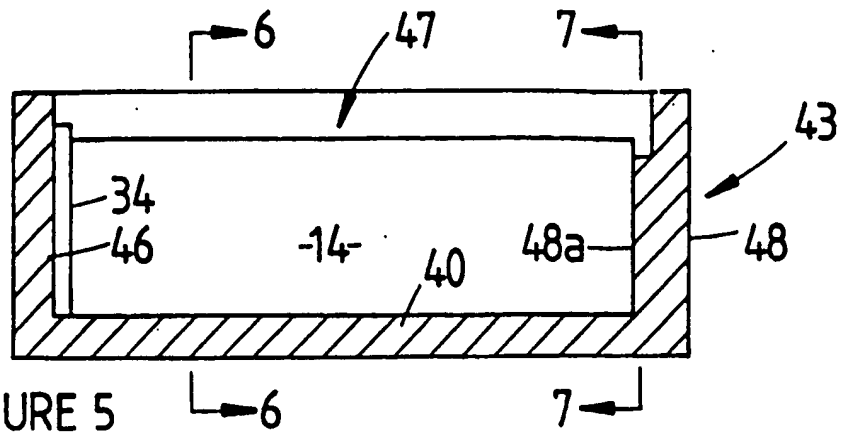


FIGURE 4

4/7



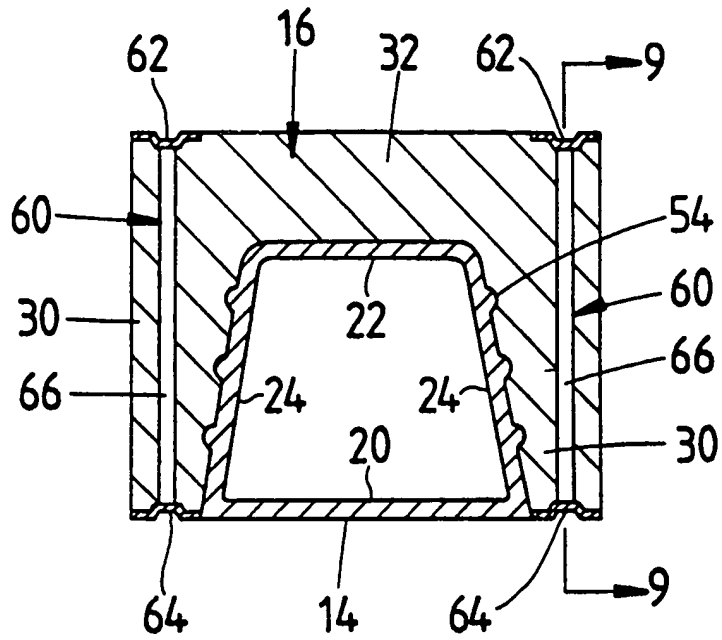


FIGURE 8

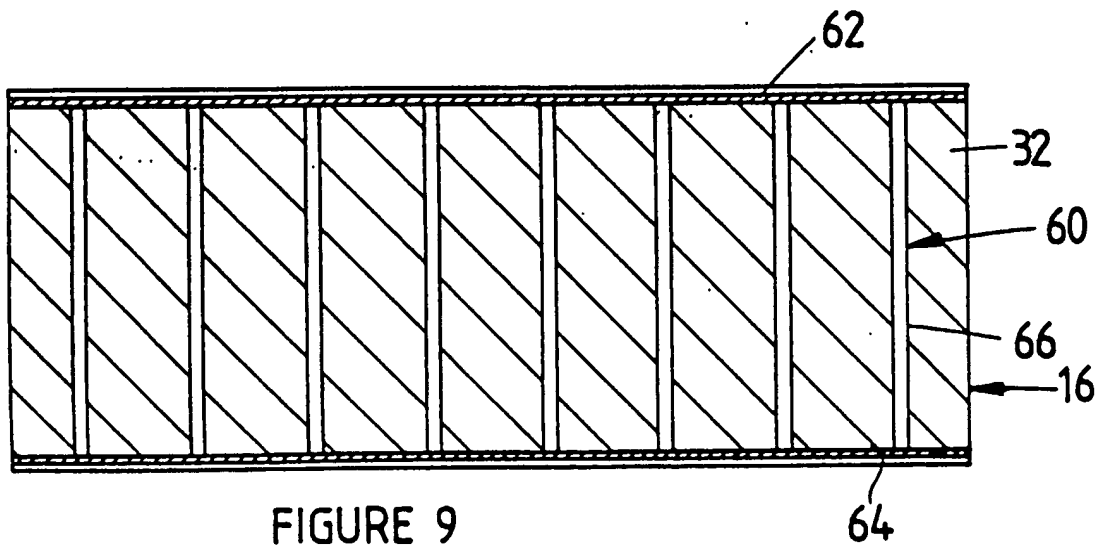
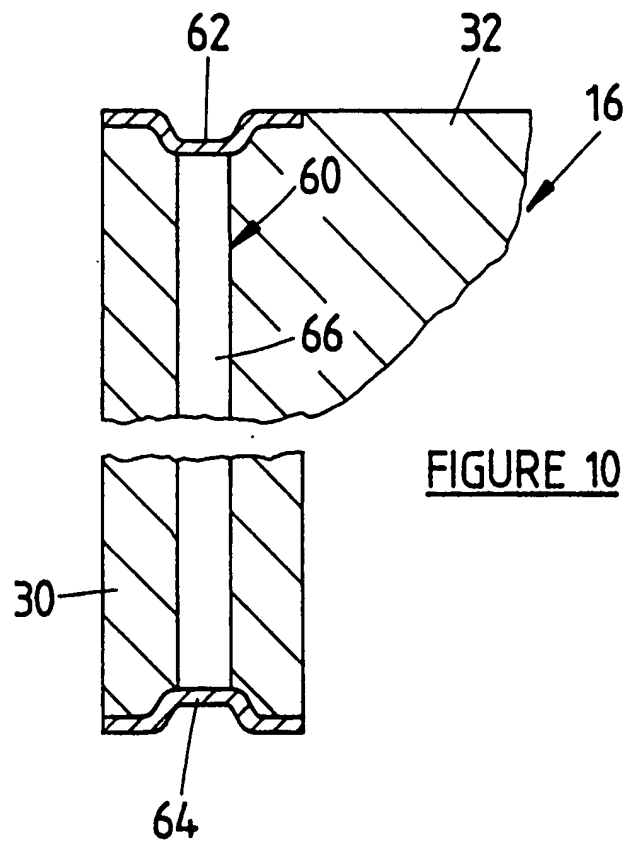
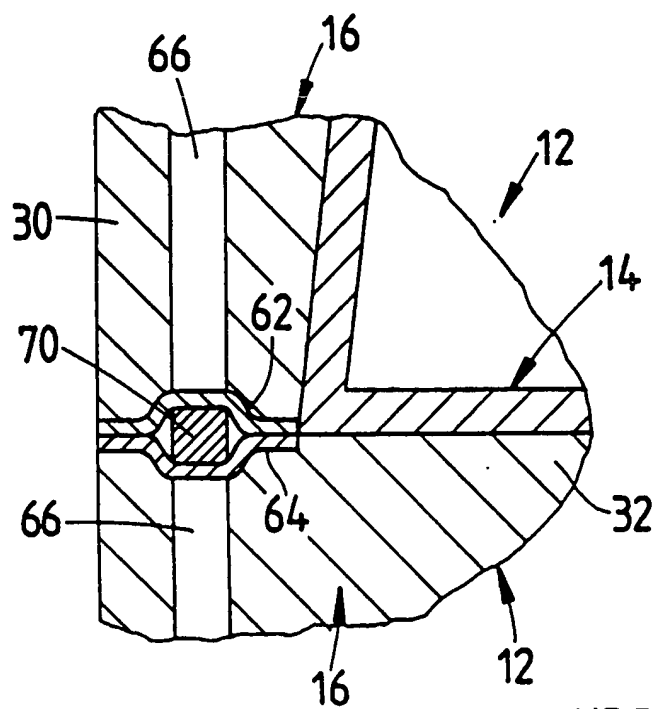


FIGURE 9

6/7

FIGURE 10FIGURE 11

7/7

FIGURE 12

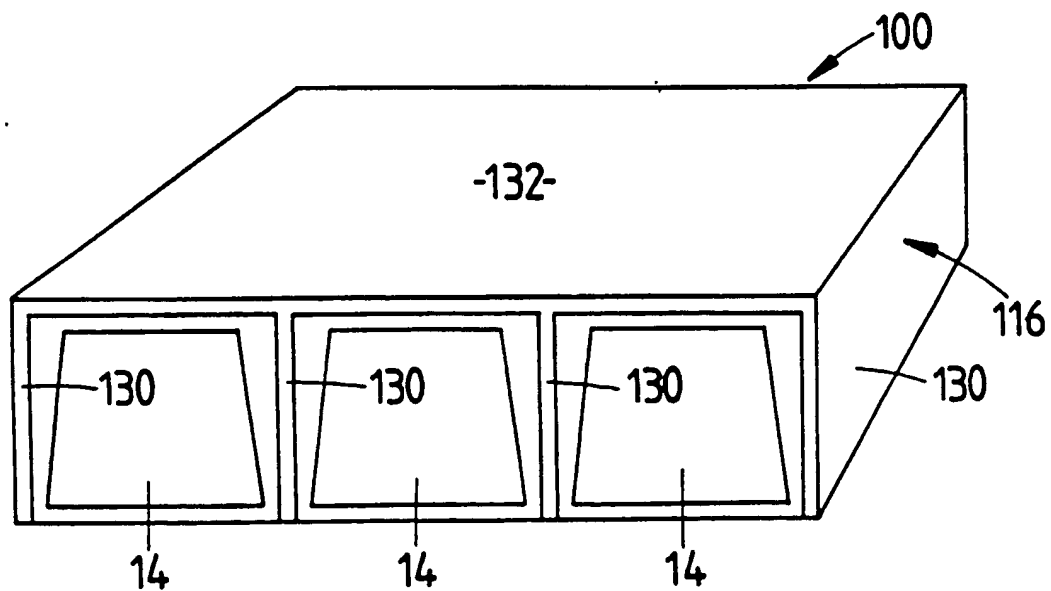
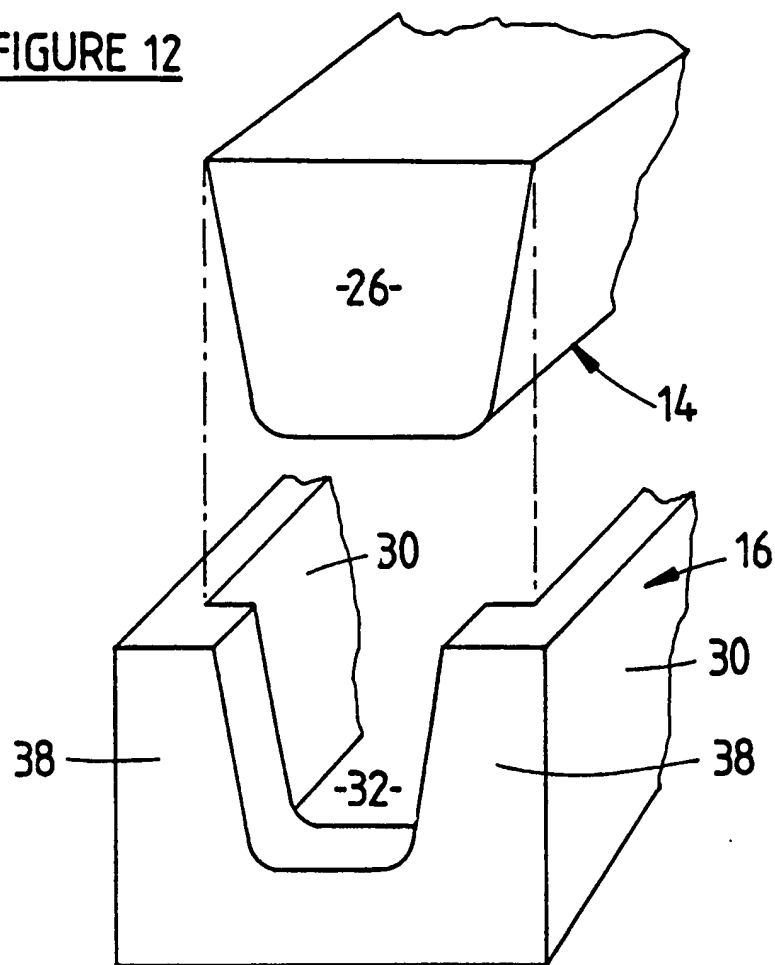



FIGURE 13

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00272

A. CLASSIFICATION OF SUBJECT MATTER Int. Cl. ⁶ E04H 13/00 According to International Patent Classification (IPC) or to both national classification and IPC												
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC E04H 13/00 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC as above Electronic data base consulted during the international search (name of data base, and where practicable, search terms used) DERWENT JAPIO												
C. DOCUMENTS CONSIDERED TO BE RELEVANT												
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.										
X	US 3986308 A (JONES) 19 October 1976 column 3 lines 3-7 and 40-47	1-5, 8-13										
X	US 4073100 A (DIGIOVANNI, Jr) 14 February 1978 column 1 lines 55-65, figure 1	1, 9										
X	US 5157817 A (DAVIDION) 27 October 1992 column 2 lines 45-50, column 4 lines 3-5	10, 11										
A	FR 2323846 A (AUZELLE) 8 April 1977 figures 1 and 13	1										
<input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. <input checked="" type="checkbox"/> See patent family annex.												
* Special categories of cited documents : <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier document but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed	
"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention											
"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone											
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art											
"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family											
"P" document published prior to the international filing date but later than the priority date claimed												
Date of the actual completion of the international search 27 June 1995		Date of mailing of the international search report 13 July 1995 (13.07.95)										
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. 06 2853929		Authorized officer  D MELHUISE Telephone No. (06) 2832426										

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00272

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
A	FR 2507658 A (SOTRALENTZ S A) 17 December 1982 figure 1	1
A	DE 4242250 A (HOSTNIK et al.) 11 May 1994 figures 1 and 4	1
A	US 2192104 A (REYNOLDS) 27 February 1940 figure 2	10

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00272

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
US	3986308		
US	4073100		
US	5157817	CA 2062518	US 5203810
FR	2323846		
FR	2507658	BE 893540	NL 8202447
DE	4242250		
END OF ANNEX			

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00272

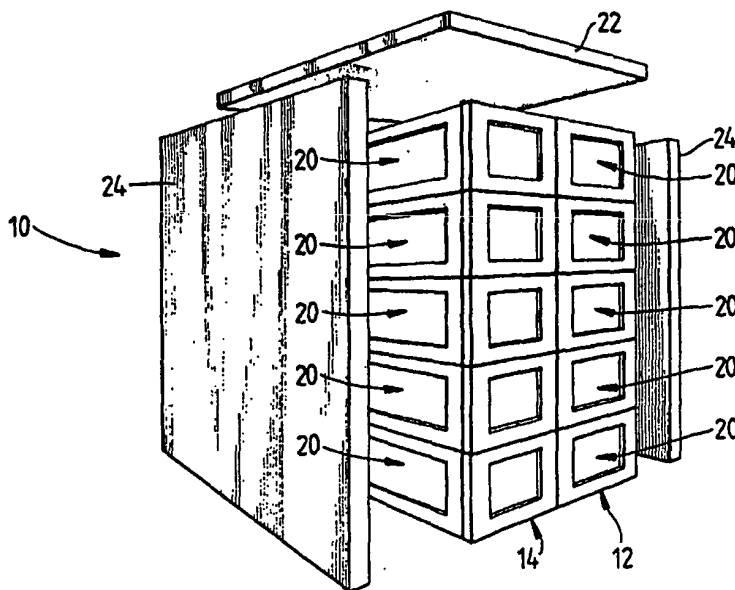
Box I Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)	
This international search report has not established in respect of certain claims under Article 17(2)(a) for the following reasons:	
1.	<input type="checkbox"/> Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2.	<input type="checkbox"/> Claim Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3.	<input type="checkbox"/> Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II Observations where unity of invention is lacking (Continuation of Item 2 of first sheet)	
This International Searching Authority found multiple inventions in this international application, as follows:	
1.	<input type="checkbox"/> As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2.	<input type="checkbox"/> As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.	<input type="checkbox"/> As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.	<input type="checkbox"/> No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
Remark on Protest	
	<input type="checkbox"/> The additional search fees were accompanied by the applicant's protest.
	<input type="checkbox"/> No protest accompanied the payment of additional search fees.

PCTWORLD INTELLECTUAL PROPERTY ORGANIZATION
International Bureau

INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : E04H 13/00	A1	(11) International Publication Number: WO 95/31624 (43) International Publication Date: 23 November 1995 (23.11.95)
(21) International Application Number: PCT/AU95/00273 (22) International Filing Date: 12 May 1995 (12.05.95) (30) Priority Data: PM 5600 12 May 1994 (12.05.94) AU PM 6219 10 June 1994 (10.06.94) AU 308,522 19 September 1994 (19.09.94) US (71)(72) Applicant and Inventor: GIANNARELLI, Emilio, Teodoro [AU/AU]; 246 Nicholson Street, Fitzroy, VIC 3065 (AU). (74) Agents: WEBBER, David, Brian et al.; Davies Collison Cave, 1 Little Collins Street, Melbourne, VIC 3000 (AU).		(81) Designated States: AM, AT, AU, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LT, LU, LV, MD, MG, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TT, UA, UG, US, UZ, VN, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD, SZ, UG). Published <i>With international search report.</i>

(54) Title: MAUSOLEUM



(57) Abstract

A module for forming a mausoleum (10) by assembly of a plurality of like modules (20), the module (20) comprising an integral crypt structure (30) defining a pair of opposed crypt side walls (32), a crypt roof (40), and end wall (36) and a crypt floor (38). The end of the structure opposite the end wall is open, but closeable by sealing attachment thereto of an end closure member (42). The side walls (32), roof (40), floor (38) and the end wall (36) are formed from inner and outer skins (20) which are spaced apart and between which is provided a thermally insulative material (164). The inner and outer skins (162, 160) are formed as plastics mouldings. A plurality of like modules (20) may be stacked vertically one above the other to form the mausoleum (10).

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AT	Austria	GB	United Kingdom	MR	Mauritania
AU	Australia	GE	Georgia	MW	Malawi
BB	Barbados	GN	Guinea	NE	Niger
BE	Belgium	GR	Greece	NL	Netherlands
BF	Burkina Faso	HU	Hungary	NO	Norway
BG	Bulgaria	IE	Ireland	NZ	New Zealand
BJ	Benin	IT	Italy	PL	Poland
BR	Brazil	JP	Japan	PT	Portugal
BY	Belarus	KE	Kenya	RO	Romania
CA	Canada	KG	Kyrgyzstan	RU	Russian Federation
CF	Central African Republic	KP	Democratic People's Republic of Korea	SD	Sudan
CG	Congo	KR	Republic of Korea	SE	Sweden
CH	Switzerland	KZ	Kazakhstan	SI	Slovenia
CI	Côte d'Ivoire	LI	Liechtenstein	SK	Slovakia
CM	Cameroon	LK	Sri Lanka	SN	Senegal
CN	China	LU	Luxembourg	TD	Chad
CS	Czechoslovakia	LV	Latvia	TG	Togo
CZ	Czech Republic	MC	Monaco	TJ	Tajikistan
DE	Germany	MD	Republic of Moldova	TT	Trinidad and Tobago
DK	Denmark	MG	Madagascar	UA	Ukraine
ES	Spain	ML	Mali	US	United States of America
FI	Finland	MN	Mongolia	UZ	Uzbekistan
FR	France			VN	Viet Nam
GA	Gabon				

- 1 -

MAUSOLEUM

BACKGROUND OF THE INVENTION

5 Field of the Invention

This invention relates to a mausoleum and to a module for forming a mausoleum.

United States patents 3,878,656, 3,897,663, 3,938,773, 4,048,772, 4,068,425,
10 5,243,794 describe various forms of mausoleums constructed from prefabricated members. These are intended for above ground burial and, usually, present a vertically and horizontally extending array of crypts.

The crypt structure of United States patent 3,897,663 has spaced parallel vertical
15 walls having sidewardly projecting supports at vertically spaced locations, horizontal slabs being positioned on the support so as to extend between the side walls. The arrangements of United States patents 3,878,656, and 3,938,773 employ modules which have at least portions which are of inverted U shaped section so that the lower edges of these may rest upon upper walls of underlying modules to form the structure. The
20 arrangements in United States patents 4,048,772 and 5,243,794 use L-shaped modules. All of these arrangements are therefore characterised in that each module defines less than the whole of the side wall/ceiling/floor of each individual crypt. That is, in each case one horizontal slab or an analogous modular portion forms both the floor and the ceiling of each vertically adjacent pair of crypts, and each crypt chamber is not defined
25 until vertically superimposed modules are provided.

United States Patent 2,783,523 describes a burial vault formed of concrete and having a separately formed roof. Two vaults may be stacked one above the other, but this arrangement is not convenient for forming a multi-crypt mausoleum. For example,
30 since access to the lower vault is prevented when the uppermost vault is positioned on it, so the lower vault must be closed before stacking the vaults.

- 2 -

United States Patent 1,014,614 describes a temporary burial vault, which has bottom, top and side walls moulded together and an end cover slidable vertically to a position where it closes an open end of the vault. This vault is also not suitable for forming a multi-crypt mausoleum.

5

United States Patent 692067 describes a portable burial vault formed of a metal inner shell, closed by an end closure and then sealed by application over all exterior surfaces of a concrete-like material. This is not suitable for forming a multi-crypt mausoleum, for example since the exterior sealing is effected over all the inner shell.

10

It is highly desirable that crypts be fully sealable. Otherwise gases or liquid products formed from the entombed body may leak from the crypt and cause undesirable odours and unsightly appearance, or damage. Infestation by insects can occur if even a slight crack or opening appears in the crypt. On the other hand, it is extremely difficult to secure long term sealing in the described prior constructions. Even where adequate sealing is in the first instance provided, such as by placing sealing material between portions of the structure defining a crypt floor and side walls of the crypt, such as by use of settable or resilient sealing elements, most mausoleum structures are substantial in size and weight, and it is impossible to surely avoid long term movement of modules relative to each other, such as due to settling of mausoleum foundations, or expansion or contraction of modules or parts of these. In cases where the modules are structurally self-sufficient (ie individually capable of self-support) movement as between modules, such as twisting movement about the lengthwise axis of a crypt, may quite readily open up gaps between adjacent modules. This is particularly so where, as is usual, reinforced concrete is the medium from which the modules are formed.

25

Furthermore, for the preservation of the entombed body or other genetic material it is usually important to prevent the body from being exposed to extremes of temperature.

30

SUMMARY OF THE INVENTION

- 3 -

In one aspect, the invention provides a module for forming a mausoleum by assembly of a plurality of like modules, the module comprising an integral crypt structure defining a pair of opposed crypt side walls, a crypt roof and a crypt floor configured whereby a plurality of like modules may be stacked vertically one above the other to
5 form the mausoleum, while permitting opening and closing of each module without dismantling the mausoleum.

The crypt structure may further include an integral end wall, the end of the structure opposite the end wall being open, but closeable by attachment thereto of an end
10 closure member, means being provided for attaching and sealing the end closure member in position to close the open end.

Preferably, the side walls, roof, floor and, where integrally provided, the end wall, are formed from inner and outer skins such as of rotationally or otherwise moulded
15 plastics material, which are spaced apart and between which is provided a thermally insulative material. In particular, the crypt structure may be formed from inner and outer members which define the inner and outer skins respectively of each of the side walls, roof, floor and, where provided, end wall, of the structure, these members being interfitted one within the other and integrally attached together such as by welding or
20 other bonding techniques.

The end closure may, for example, be boltable to an end peripheral surface of the crypt structure, opposite the end wall.

25 Preferably, means is provided for locating a plurality of like crypt structures constructed in accordance with the invention one above the other, so as to limit sideward and end to end movement therebetween. Thus, each crypt structure may have on the outer surface of the roof thereof a first keying formation and on the undersurface of the floor thereof a second keying formation so that when the two modules are positioned one
30 above the other the second keying formation co-operates with the first keying formation for this purpose. The first keying formation may, for example, include one or more upwardly extending projections on the outer surface of the roof and the second keying

- 4 -

formation may comprise one or more depressions of complementary configuration on the outer surface of the floor of the crypt structure.

It is preferred that the end closure member be of double walled construction
5 similar, for example, to the structure above described for the crypt structure itself.

Vent means may be provided, either in the crypt structure or in the end closure to enable venting of gases from the internal space defined by the closed crypt structure. For example, this may comprise a one way valve which may be formed in the end
10 closure. Alternatively it may be in the end wall.

Means may also be provided for interconnecting side by side adjacent pairs of modules formed in accordance with the invention.

15 The invention also provides a mausoleum formed from a plurality of vertically stacked modules formed in accordance with the invention. The mausoleum may include one or more further pluralities of vertically stacked modules formed in accordance with the invention.

20 The invention further comprises a method of forming a mausoleum, comprising forming from a plurality of crypt modules a vertically extending stack thereof, each but the lowermost one of the stack resting upon an underlying one thereof, wherein each said module forms the side walls, roof and floor of a respective crypt.

25 The invention also provides a module for forming a mausoleum by assembly of a plurality of like modules, the module comprising a crypt structure defining a pair of opposed crypt side walls, a crypt roof, an end wall and a crypt floor, configured whereby a plurality of like modules may be stacked vertically one above the other to form the mausoleum, the side walls, roof, end wall and floor formed of spaced inner and outer
30 skins with thermal insulation therebetween and the inner skin being integrally formed.

One or more modules may be assembled on a base structure with keying

- 5 -

formations being formed on the underside of the or each module and engaged with further keying formations on the base structure to locate the modules on the base structure.

5

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE ACCOMPANYING DRAWINGS

The invention is further described by way of example only with reference to the
10 accompanying drawings in which:

Figure 1 is perspective view of a mausoleum constructed in accordance with the invention;

Figure 2 is an end view of a module incorporated into the mausoleum of Figure
15 1;

Figure 3 is a side view of the module of Figure 2;

Figure 4 is plan view of the module of Figure 2;

Figure 5 is an underside view of the module of Figure 2;

Figure 6 is a front view of three assembled ones of the modules of Figure 2;

20 Figure 7 is a perspective view of a further mausoleum module constructed in accordance with the invention;

Figure 8 is a fragmentary, vertical section through an assembled stack of modules of the kind shown in Figure 7;

Figure 9 is a fragmentary, front view of a mausoleum constructed from modules
25 of the kind shown in Figure 7;

Figure 10 is fragmentary, vertical and a lengthwise cross-section through a front cover of the module of Figure 7 and the adjoining part of the roof thereof; and

Figure 11 is a perspective view of a partly dismantled mausoleum constructed in accordance with the invention, showing a base structure of the mausoleum.

30

DETAILED DESCRIPTION

- 6 -

Figure 1 shows a mausoleum 10 formed from two adjacent side by side stacks 12, 14 of mausoleum modules 20. The modules rest upon a suitable base (not shown) which may rest upon the ground and is provided with side walls 24 which are secured such as by adhering to the outer surfaces of the unitary structure formed by the two assembled stacks. A roof 22 may be provided over the stacks.

The form of the modules 20 may be better appreciated from Figures 2 to 6. Each comprises a unitary crypt structure 30 and an end closure 42. Each structure 30 has integrally formed opposed side walls 32, an end wall 36, a floor 38 and a roof 40.

10

The end of the structure 30 opposite wall 36 is open but sealingly closeable by the closure member 42. The closure of member 42 may, for example, be attached by means of bolts or the like to the peripheral end surface of the structure 30 opposite wall 36. In general the closure member is movable to position it for attachment and is removable by movement in a direction which is permitted when the modules 20 are assembled to form the mausoleum, so that no dismantling of the mausoleum is needed to, for example, gain access to a lower most one of the modules in a stack of these. Thus, movement in a direction parallel to the general plane of the roof or floor is sufficient to permit positioning for closing the crypt structure, or for removal.

20

Roof 40 has a rectangular depression 40a therein and the floor 38 has a rectangular projection 38a of complementary form to the depression 40a. Thus, when two modules 20 are stacked one above the other, the projection 38 keys into the depression 40a in a fashion which limits side to side and end to end relative movement between the two modules.

25

The mausoleum of Figure 1 may be formed by assembling the crypt structures 30 of the modules 20, then attaching the end closures 42 as required. The internal crypt chambers defined by the modules are of sufficient size to accommodate a coffin. Thus, coffins may be entered into the chambers, with the closures 42 removed, and thereafter sealed by attachment of the closures 42.

30

- 7 -

Referring now to Figure 7, the module 120 shown therein is of generally similar design to that of the module 20. In particular, it has opposed side walls 132, a roof 140, a floor 138 and an end wall 136 all formed as a unitary integral structure, and a front closure 142. In this case, the outer surface of the roof 140 has upstanding projections
5 140b spaced along the length of the roof which interengage with complimentary recesses 138a (Figures 8 and 9) on the underside of the floor 138 to provide a keying action for limiting side to side and end to end relative movement of superimposed modules, in a similar fashion to that described in relation to the module 20.

10 In this case, the structure 130 is double walled, as will be evident from, for example, Figure 8 which shows the construction of the roof, floor and end wall as having an outer skin 160 and an inner skin 162. These are spaced somewhat apart from each other and the space therein filled with suitable insulative material 164. The skins 160, 162 are formed from members which are interfitted one within the other and then secured
15 together such as by welding. In the present instance, the outer skin 160 is formed by a member 170 and the inner skin 162 formed on a member 172, both of which members are rotationally moulded and of somewhat cup shaped configuration so as to fit one within the other in the spaced arrangement shown.

20 The insulative material provides some structural support for the crypt structure.

As best shown in Figure 10, member 172 has an outturned peripheral rim 174 which has a first portion 174a which extends normally to the direction of extent of the structure 130 and a back-turned portion 174b which extends from the free outer edge of
25 portion 174a back in spaced relationship to the part of the skin 162 which forms the inner surface of the roof 140, in parallel disposition thereto. Portion 174b of rim 174 fits over an adjacent peripheral indented free edge portion 178 formed on member 170. Similarly, an internal peripheral flange 178a of member 170 underlies the flange portion 174a of rim 174 on member 172.

30

A method of forming the structure 130 using members 170, 172 comprises firstly forming the members by rotational moulding, and then positioning them in the

- 8 -

arrangement shown, with the member 172 within the member 170 and with the free edge portion 178 in adjacent and underlying relationship to the flange portion 174b, and the flange 178a in adjacent and underlying relationship to the flange portion 174a. The two members are then secured together in the vicinity of the flange 178a and flange portion 5 174b and/or in the vicinity of the flange portion 174a and the free edge portion 178, such as by ultrasonic or heat welding, or by use of an adhesive. The cavity formed between the skins 160 and 162 is then filled by injecting a suitable foamable and settable material through openings (not shown) in the outer skin.

10 The members 170, 172 may be formed from any suitable plastics material having good resistance to attack from body released chemicals or embalming chemicals. For example polyethylene may be suitable. The injected foam material may be expanded polyurethane, in any event preferably having good heat insulative properties.

15 The closure 142 is in this case also double skinned, having an outer skin 144 and an inner skin 146, the cavity therebetween being filled with, for example, expanded polyurethane. The enclosure may be formed by a similar technique to that described in relation to structure 130.

20 The closure 142 has a series of openings 148 and the closure is affixable to the periphery of the structure 130 opposite wall 136 by use of bolts 150 which extend through these openings and into internally threaded elements 152 moulded into the structure 130. In this case the elements 152 are moulded into the flange 178a of the outer member 170, which flange lies immediately behind the flange portion 174a of the 25 inner member 172, and the bolts 150 extend through openings 151 in the flange portion 174a and thence into the elements 152. Bolts 150 may have specially shaped heads, requiring a specially configured tool to engage and turn the bolts, so as to inhibit vandals or the like from easily removing the bolts.

30 The closure 142 preferably has, as shown, one or more resilient sealing rings 158 which are provided in peripheral recesses 159 on the inner face of the closure so that as the bolts 150 are tightened the sealing rings are firmly engaged with the end surface of

- 9 -

the structure 130 (at flange portion 174a) to provide a full and effective seal as between the closure and the structure 130. The closure may also have at its inner face an inwardly projecting peripheral surface 149 which extends inwardly, in the assembled condition, to engage with the surface of the inner member 172.

5

Gases generated within the sealed cavity defined by the assembled module 120 are preferably taken therefrom in use of the module by means of a one way valve permitting egress of gas but preventing gas coming into the internal cavity 145 defined by the module. In the present case a conventional one way valve 180 is provided on the
10 closure 142. This may have an external connector 182 which may be coupled to a suitable exhaust pipe 184 to lead the gases away from the structure. By use of elbow connectors such as the connector 182 shown, or T-connectors, the valves 180 associated with a vertical stack of modules may be interconnected by several pipes 184 to be taken to a common exhaust. A single valve may alternatively be provided connected by pipes
15 to a plurality of modules. In any event, the valves, or pipe openings to the crypt chamber may be positioned in the crypt structure itself, such as in the end wall thereof.

The internal surface of the floor of the module 120 may have upstanding ribs such as the ribs 190 shown in Figure 9 to facilitate sliding of a coffin 195 (Figs. 8 and 10)
20 within the module. The inner surface of the floor may be arranged to slope downwardly towards the rear of the module, as compared to the outer surface thereof.

In order to facilitate structural integrity of a mausoleum constructed using the modules 120, side by side modules may be interconnected. In the present instance, the
25 upper surface of the roof 140 of the structure 130 has four recesses 194, two to either side thereof, at front and rear locations, to permit two side by side modules to be connected together by locking plates 196 having two downwardly depending spigots 198 each engageable in a respective bore 200 in the lower surface of a recess 194. Thus, the two spigots 198 of each plate 196 may connect one into the bore 200 of one of two
30 adjacent modules 120 and the other into the bore 200 of the other adjacent module. When so positioned, the plates lie flush with the upper surface of roof 140.

- 10 -

To assist in maintaining the interior of the modules in good condition, it is preferred that the coffin floor have positioned thereon a material able to absorb liquids which may egress from coffins in the module. A suitable material for this purpose is that marketed as "Super Inner Liner" or "Zorb-Sheet" or "Z.I.L." material, marketed by
5 Ensure-A-Seal 431 Manor Road, Delmont, United States of America. This is in the form of a sheet of paper-like appearance which on contact with liquids turns these into a semi-solid state. A sheet of this folded into concertina form may be position on the floor of the module, for example, towards the end wall 136.

10 Because the modules described are light, being formed from plastics, transport and assembly of the modules is simple. There is little risk of damage during transport as may occur with reinforced concrete structures. To facilitate handling, the outer surfaces of the side walls of the crypt structure 130 have depressions 195 which define handgrips. While, in the described arrangements, each module defines a single crypt chamber, the
15 invention envisages the formation of integral modules defining more than one crypt chamber, adjacent chambers having a common side wall, and/or a common floor and roof.

The end closure 142, like end closure 42, is capable of being affixed in position
20 or removed from the crypt structure 130 by movement inwardly or outwardly, only, relative to the crypt structure 130, thus permitting free entry and closing of the crypts even when the structures 130 are formed into a mausoleum.

To complete a mausoleum using the described construction, the end closure 142
25 may be faced with a suitable material such as granite which may be secured in position after sealing the crypt chamber. The end surfaces of the crypt structure, at the open end thereof, may have openings to receive spigots or to threadedly receive bolts to permit this attachment. The end closure may have aligned openings to allow the bolts or spigots to pass through the end closure, or the end closure may have edge parts cut away to
30 accommodate these.

The thermal insulation provided by the double walled combustion of the invention

- 11 -

facilitates maintenance of a constant temperature within the crypt structure and thus also facilitates preservation of the entombed body. By forming the inner member of the crypt structure as a one piece moulding, which is in use readily sealed at its open end, the possibility of leakage from the crypt structure is lessened.

5

Figure 11 illustrates how a mausoleum 198 may be formed with a supporting base structure 200. The base structure 200 rests on the ground, in this case, and is formed, for example, of reinforced concrete. Upstanding projections 202 are formed on the upper surface 204 of the base structure 200. These are sized and configured so as to fit into
10 the recesses 138a on the undersides of lowermost side by side ones of the crypt modules 120 forming the mausoleum. Thus, the lowermost crypt modules are positively located in position on the base structure 200.

The described construction has been advanced merely by way of explanation, and
15 many modifications and variations may be made thereto without departing from the spirit and scope of the invention which includes every novel feature and combination of features herein disclosed.

- 12 -

CLAIMS:

1. A module for forming a mausoleum by assembly of a plurality of like modules, the module comprising a crypt structure defining a pair of opposed crypt side walls, a
5 crypt roof, an end wall and a crypt floor, configured whereby a plurality of like modules may be stacked vertically one above the other to form the mausoleum, the side walls, roof, end wall and floor being formed of spaced inner and outer skins with thermal insulation therebetween and the inner skin being integrally formed.
- 10 2. A module according to claim 1 wherein the end of the crypt structure opposite the end wall is open, but closeable by attachment thereto of an end closure member, means being provided for attaching and sealing the end closure member in position to close the open end.
- 15 3. A module according to claim 2 wherein the inner and outer skins are formed as one-piece plastics mouldings.
4. A module according to claim 3 wherein the inner and outer skins are formed as respective separate members interfitted one within the other and integrally attached
20 together.
5. A module according to claim 4 wherein the inner and outer skins are formed as one-piece plastics mouldings.
- 25 6. A module according to claim 4 wherein the end closure is boltable to an end peripheral surface of the crypt structure, opposite the end wall.
7. A module according to claim 1 wherein means is provided for locating a plurality of like crypt structures one above the other, so as to limit sideward and end to end
30 movement therebetween.
8. A module according to claim 7 wherein the crypt structure has on the outer

- 13 -

surface of the roof thereof a first keying formation and on the undersurface of the floor thereof a second keying formation so that when two like modules are positioned one above the other the second keying formation co-operates with the first keying formation so as to limit sideward and end to end movement therebetween.

5

9. A module according to claim 8 wherein the first keying formation includes one or more upwardly extending projections on the outer surface of the roof and the second keying formation comprises one or more depressions of complementary configuration on the outer surface of the floor of the crypt structure.

10

10. A module according to claim 2 wherein said end closure member is of double walled construction.

11. A module according to claim 2 wherein vent means is provided to enable venting
15 of gases from the internal space defined by the closed crypt structure.

12. A module according to claim 1 including means for interconnecting side by side adjacent pairs of modules.

20 13. A mausoleum formed from a plurality of vertically stacked modules formed in accordance with any one of claims 1 to 12.

14. A mausoleum according to claim 13 including one or more further pluralities of vertically stacked modules formed in accordance with any one of claims 1 to 12.

25

15. A mausoleum as claimed in claim 13 or 14 wherein lowermost ones of the modules are provided on a base structure formed with keying formations to engage keying formations on the undersides of the lowermost modules to locate the lowermost modules in position on the base structure.

30

16. A method of forming a mausoleum, comprising forming from a plurality of crypt modules a vertically extending stack thereof, each but the lowermost one of the stack

- 14 -

resting upon an underlying one thereof, wherein each said module forms the side walls, roof and floor of a respective crypt.

17. A method as claimed in claim 16 comprising the step of forming a base structure
5 on which the lowermost modules rest, the undersides of the lowermost modules having keying formations which are brought into engagement with keying formations on the base structure to key the modules to the base structure.

18. A module for forming a mausoleum by assembly of a plurality of like modules,
10 the module comprising an integral crypt structure defining a pair of opposed crypt side walls, a crypt roof and a crypt floor, configured whereby a plurality of like modules may be stacked vertically one above the other to form the mausoleum, wherein means is provided for locating a plurality of like crypt structures one above the other, so as to limit sideward and end to end movement therebetween.

15

19. A module for forming a mausoleum by assembly of a plurality of like modules, the module comprising an integral crypt structure defining a pair of opposed crypt side walls, a crypt roof, an end wall and a crypt floor, configured whereby a plurality of like modules may be stacked vertically one above the other to form the mausoleum, wherein
20 the side walls, roof, floor and the end wall are formed from inner and outer skins which are spaced apart and between which is provided a thermally insulative material.

20. A module for forming a mausoleum by assembly of a plurality of like modules, the module comprising an integral crypt structure defining a pair of opposed crypt side
25 walls, a crypt roof, an end wall and a crypt floor, configured whereby a plurality of like modules may be stacked vertically one above the other to form the mausoleum, while permitting opening and closing of each module without dismantling the mausoleum.

1/10

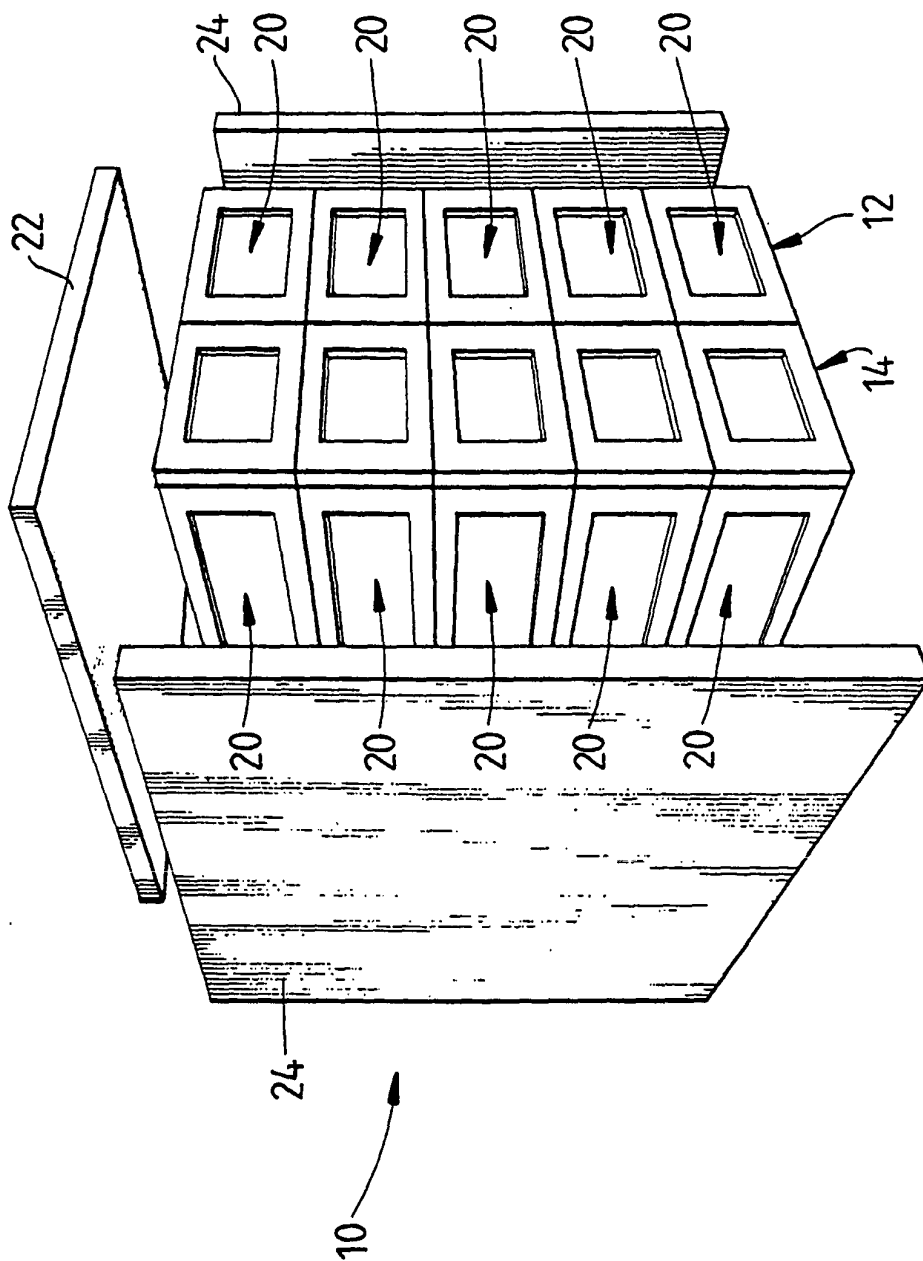
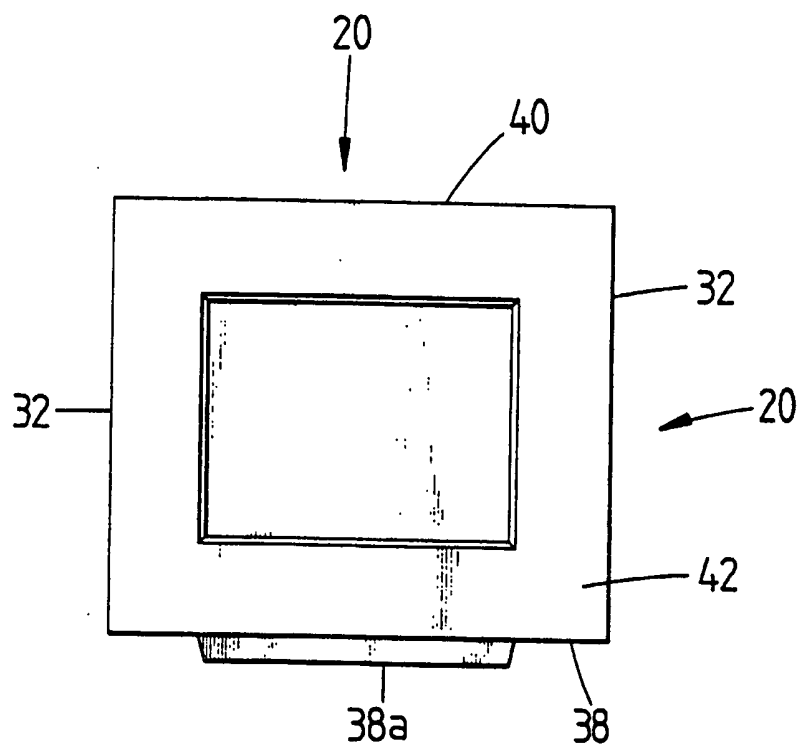


FIG 1

2/10

FIG 2

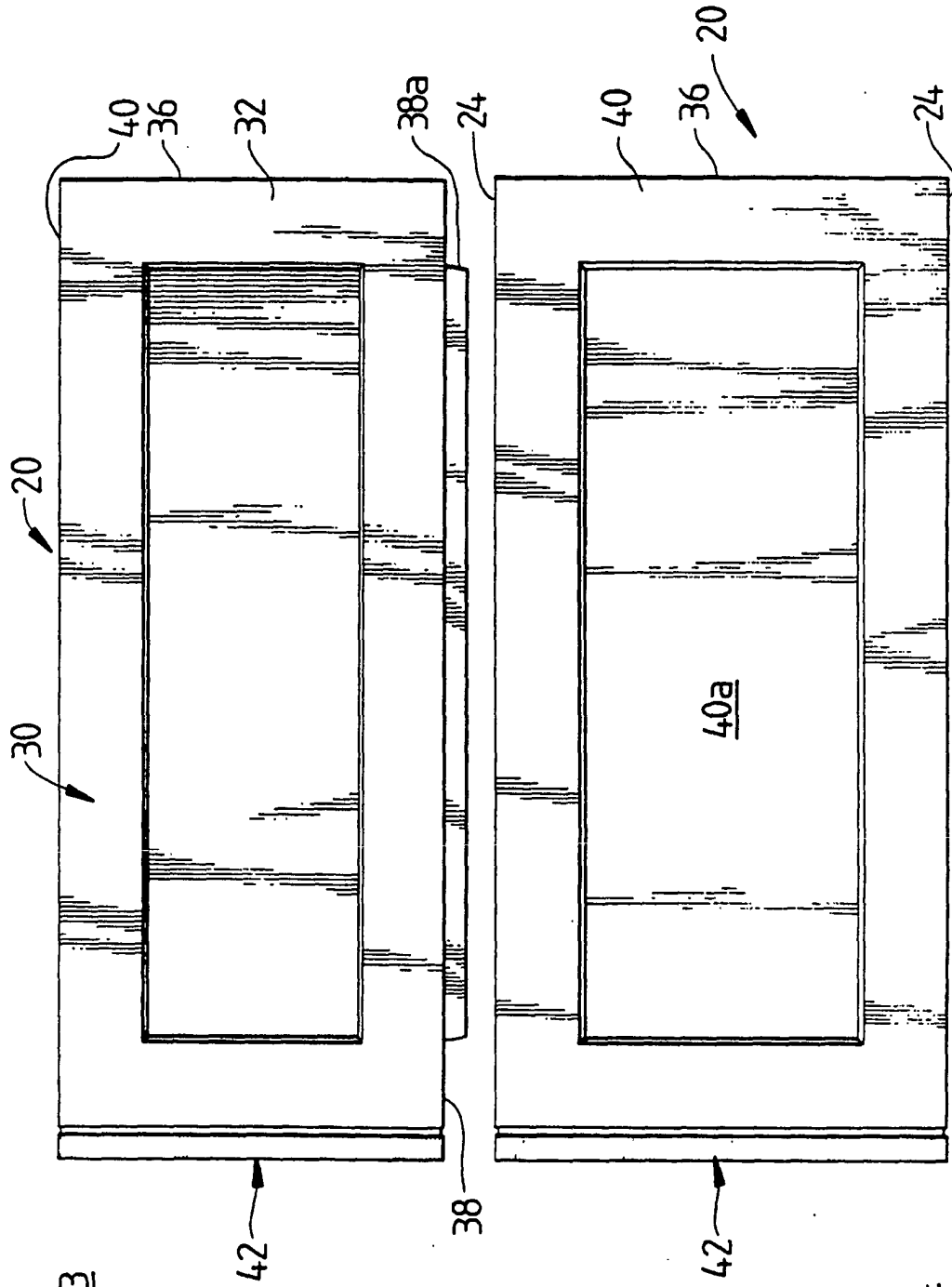


FIG 3

FIG 4

4/10

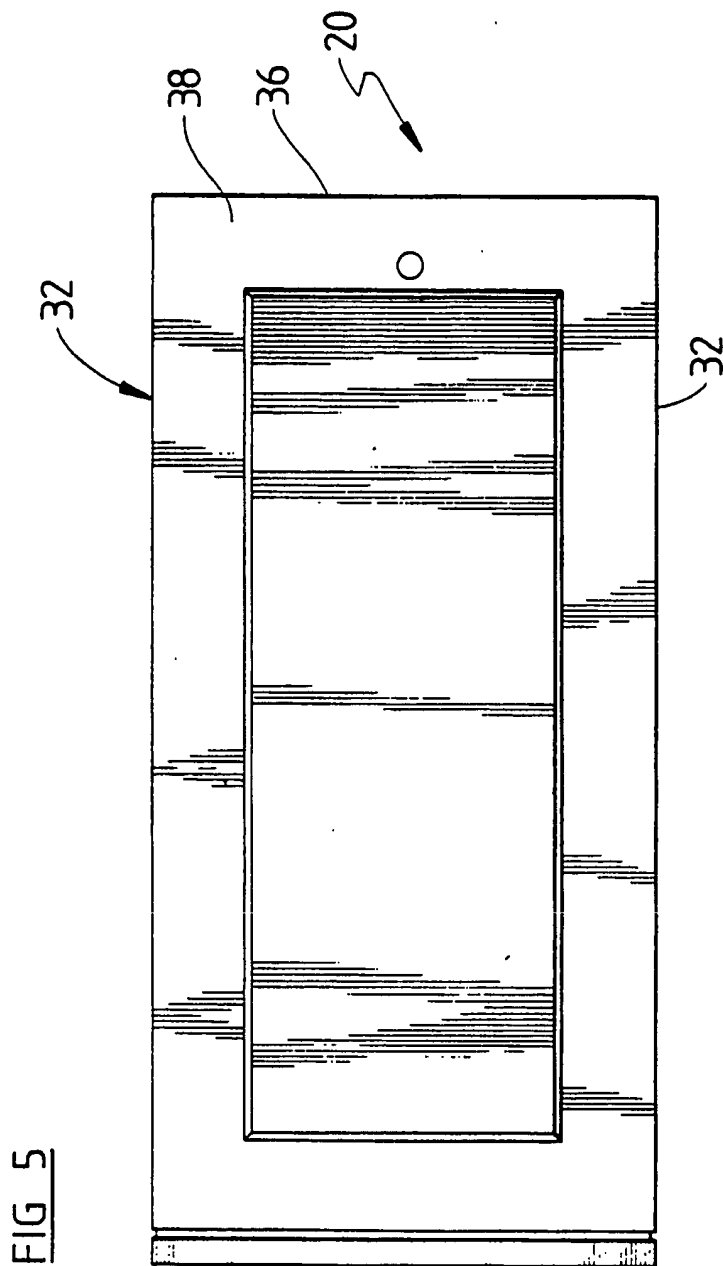
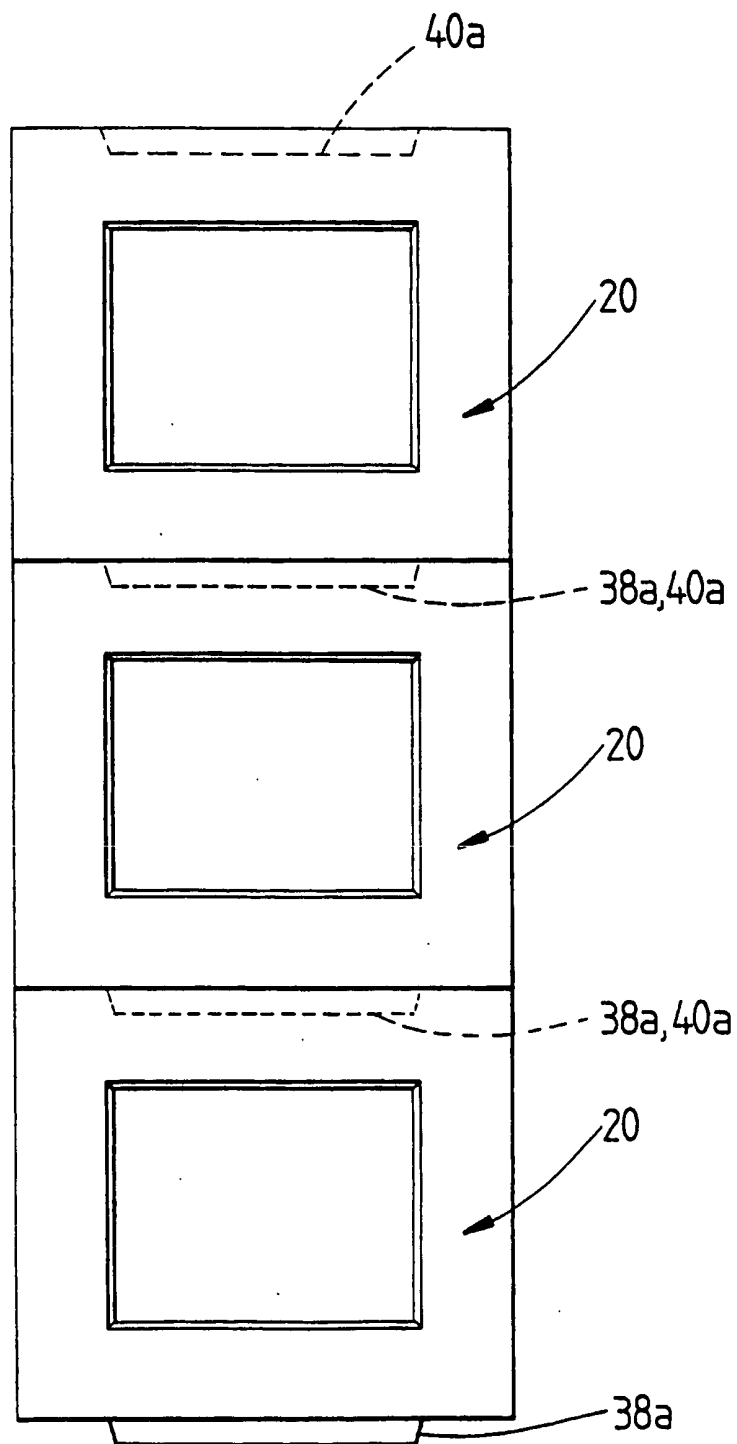


FIG 6

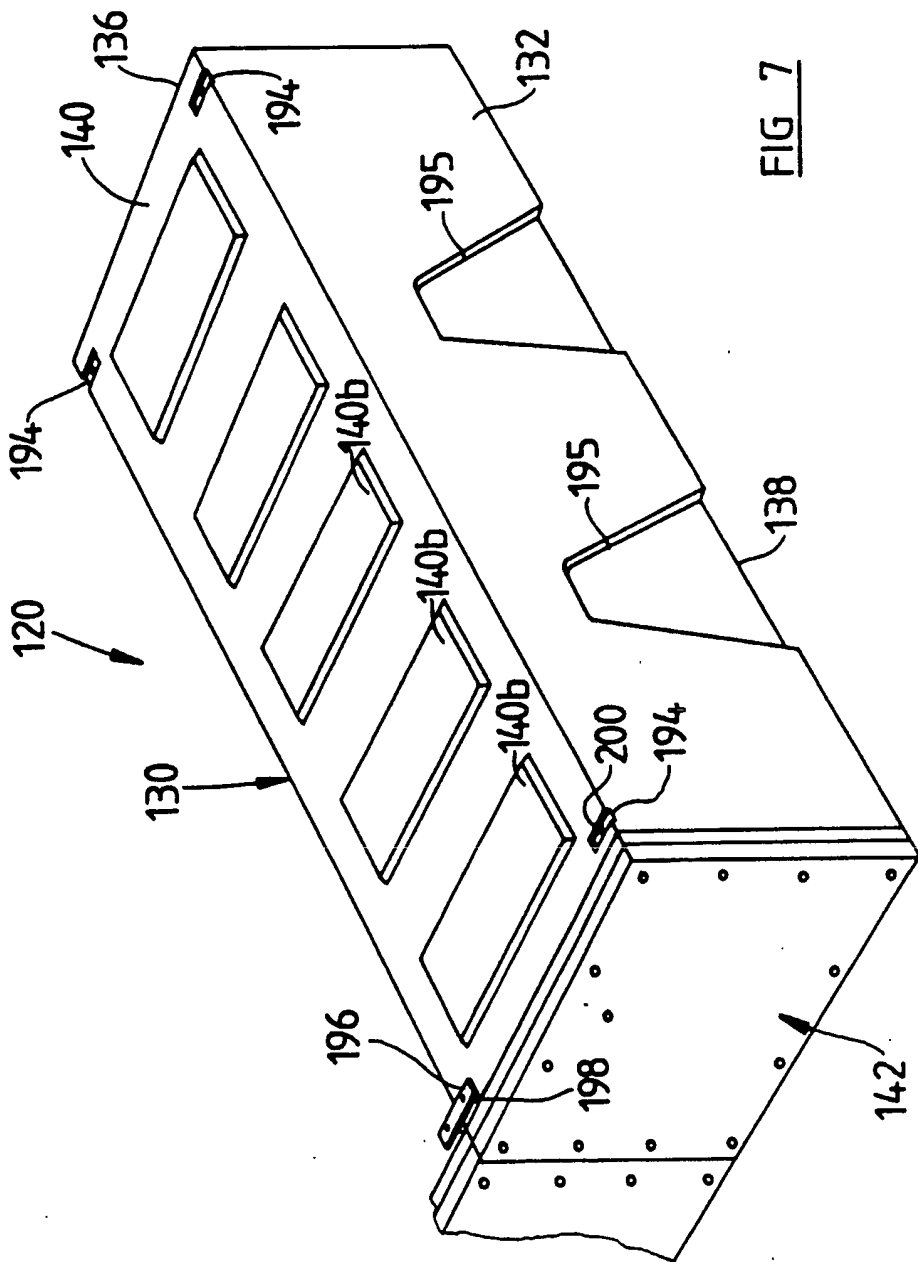
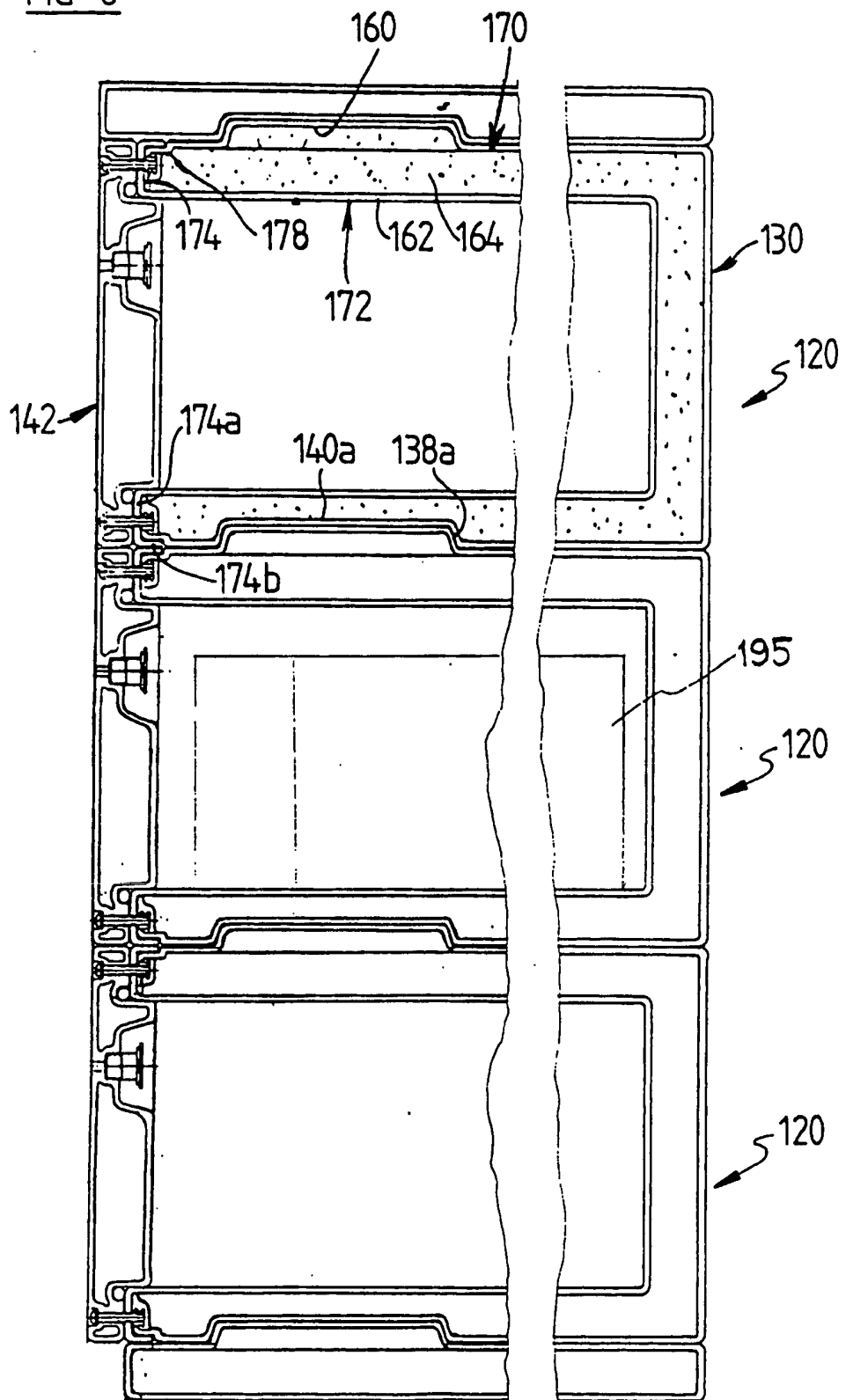


FIG 7

7/10

FIG 8



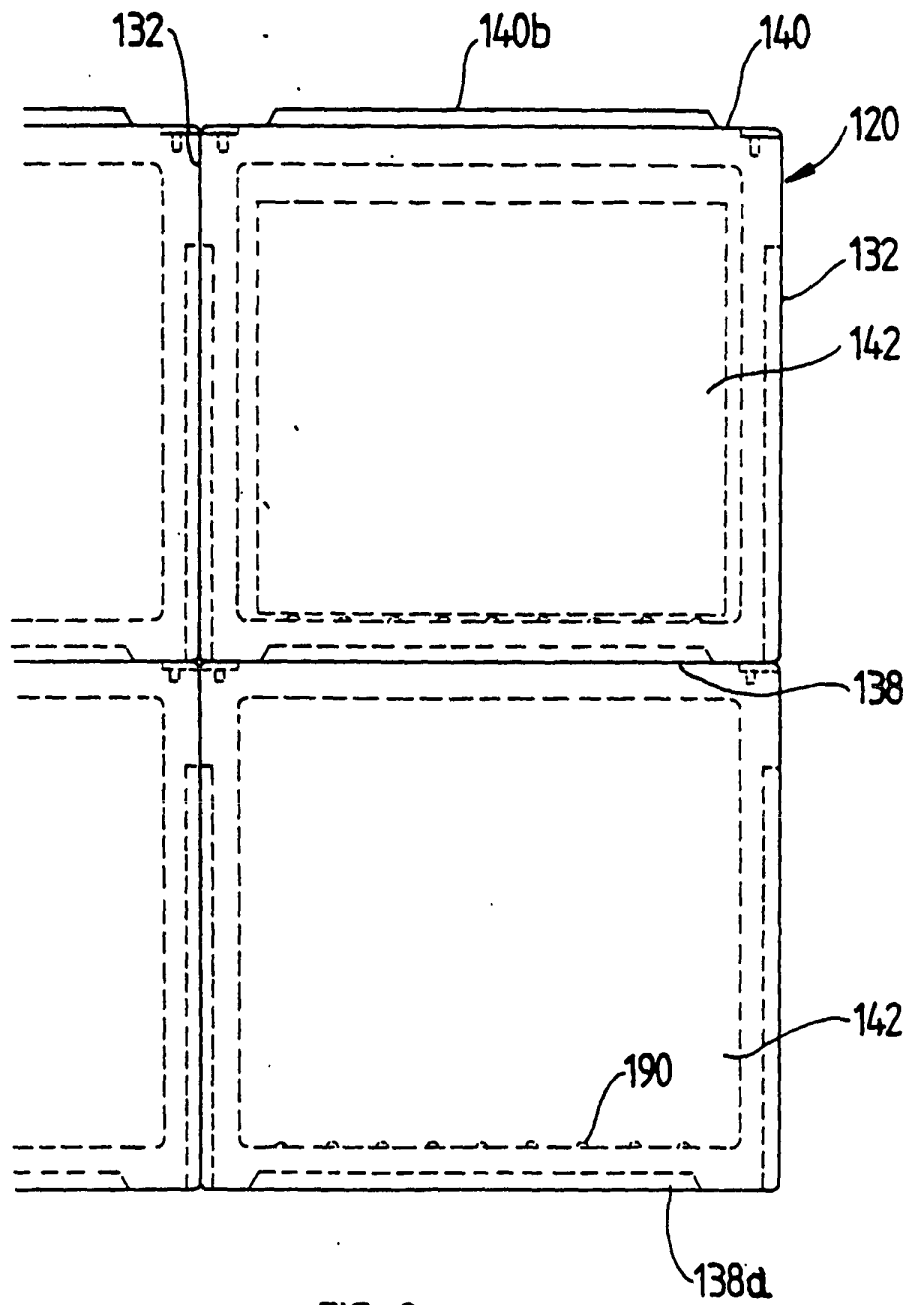


FIG 9

10/10

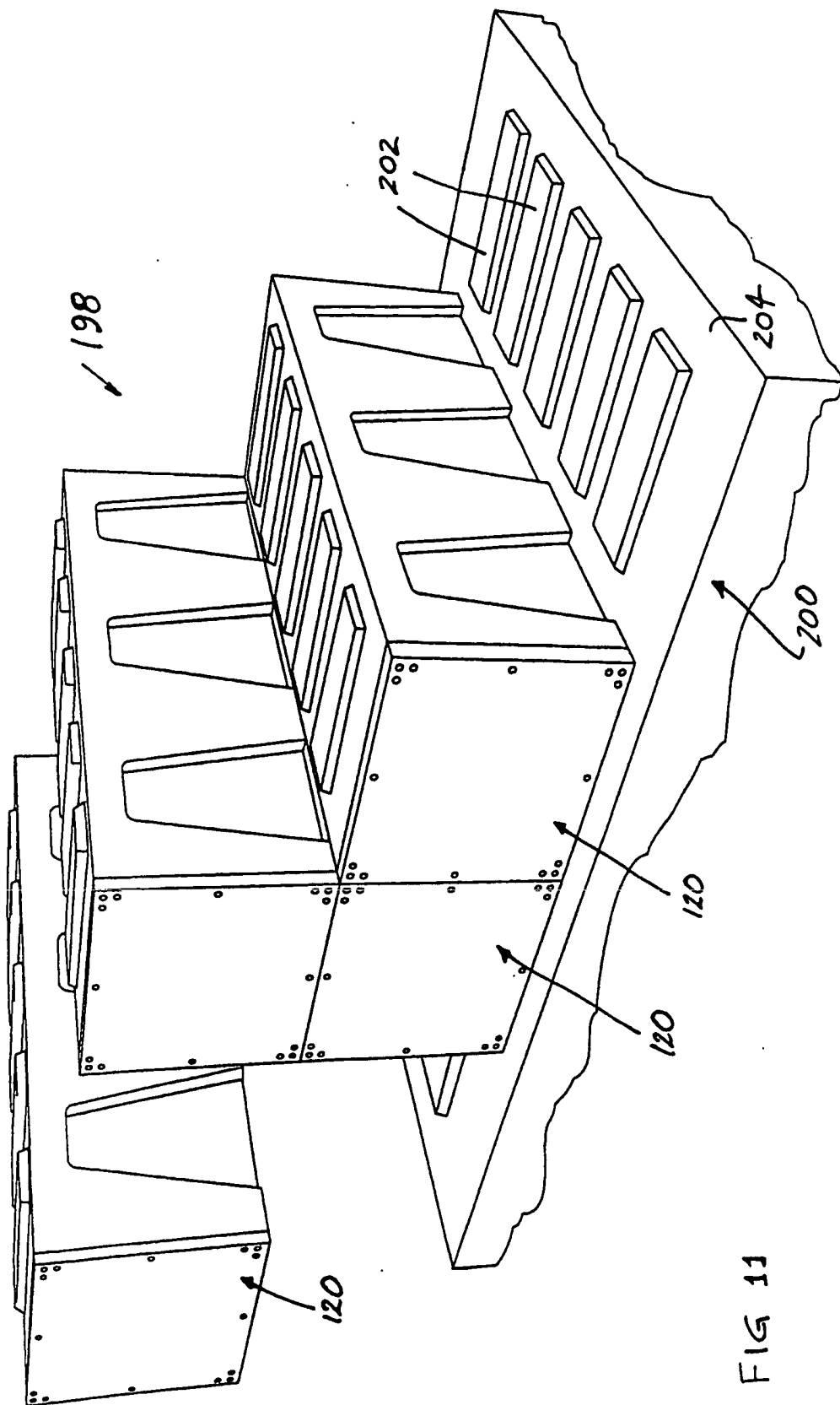


FIG 11

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 95/00273

A. CLASSIFICATION OF SUBJECT MATTER Int. Cl. ⁶ E04H 13/00 According to International Patent Classification (IPC) or to both national classification and IPC				
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC E04H 13/00 Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched AU: IPC as above Electronic data base consulted during the international search (name of data base, and where practicable, search terms used) DERWENT JAPIO				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to Claim No.		
X	DE 2323846 A (AUZELLE et al.) 8 April 1977 figures 1 and 3	16-18, 20		
X	US 3986308 A (JONES) 19 October 1976 column 2 lines 22-27	16-18, 20		
X	US 2674024 A (DIOGUARDI, Jr) 6 April 1954 column 3 lines 36-39	16-18, 20		
<div style="display: flex; justify-content: space-between;"> <div> <input checked="" type="checkbox"/> Further documents are listed in the continuation of Box C. </div> <div> <input checked="" type="checkbox"/> See patent family annex. </div> </div>				
<table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </td> <td style="width: 50%; vertical-align: top;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p> </td> </tr> </table>			<p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>
<p>* Special categories of cited documents :</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p>	<p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</p> <p>"&" document member of the same patent family</p>			
Date of the actual completion of the international search 29 June 1995		Date of mailing of the international search report 13 July 1995 (13. 07. 95)		
Name and mailing address of the ISA/AU AUSTRALIAN INDUSTRIAL PROPERTY ORGANISATION PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No. 06 2853929		Authorized officer <div style="text-align: center; font-family: cursive;">D. Melhuish</div> D MELHUISE Telephone No. (06) 2832426		

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00273

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate of the relevant passages	Relevant to Claim No.
X Y	US 4073100 A (DIGIOVANNI, Jr) 14 February 1978 figures 1 and 2A	16-18, 20 1-5, 7-10, 12-15, 19
Y	US 3541747 A (OLSON) 24 November 1970 column 4 lines 12-31	1-5, 7-10, 12-15, 19
A	WO 88/08912 A (LEMASSON) 17 November 1988 abstract, figure 3	1, 19
A	WO 93/03243 A (CHRISTIAN MEMORIAL CULTURAL CENTER) 18 February 1993 figure 1	18

INTERNATIONAL SEARCH REPORT

International application No.
PCT/AU 95/00273

Box I	Observations where certain claims were found unsearchable (Continuation of Item 1 of first sheet)
<p>This international search report has not established in respect of certain claims under Article 17(2)(a) for the following reasons:</p>	
1.	<input type="checkbox"/> Claims Nos.: because they relate to subject matter not required to be searched by this Authority, namely:
2.	<input type="checkbox"/> Claim Nos.: because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3.	<input type="checkbox"/> Claims Nos.: because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).
Box II	Observations where unity of invention is lacking (Continuation of item 2 of first sheet)
<p>This International Searching Authority found multiple inventions in this international application, as follows: (see additional sheet)</p>	
1.	<input type="checkbox"/> As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims
2.	<input checked="" type="checkbox"/> As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3.	<input type="checkbox"/> As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4.	<input type="checkbox"/> No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
<p>Remark on Protest</p>	
	<input type="checkbox"/> The additional search fees were accompanied by the applicant's protest.
	<input type="checkbox"/> No protest accompanied the payment of additional search fees.

(continuation) Box II

The features common to claims 1, 13, 16, 18, 19 and 20 are crypt modules comprising side walls, roof and floor, that may be stacked vertically to form a mausoleum.

However the search has revealed that these features are not novel since they are disclosed in documents US,A, 4073100 (DIGIOVANNI, Jr) 14 February 1978, column 1 lines 55-57 and US,A, 2674024 (DIOGUARDI) 6 April 1954, column 3 lines 36-39.

Consequently the common features are not special technical features within the meaning of PCT Rule 13.2, second sentence, since it makes no contribution over the prior art.

Since there exists no other common feature which can be considered as a special technical feature, no technical relationship within the meaning of PCT Rule 13 between the different inventions can be seen.

Consequently it appears that, a posteriori, claims 1, 13, 16, 18, 19 and 20 do not satisfy the requirement of unity of invention.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU 95/00273

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

[illegible]